

WHAT IS CLAIMED IS:

1. A power supply apparatus comprising:  
first and second parallel resonance circuits;  
5 a first switching element that is connected to the first parallel resonance circuit and forms a first parallel resonance circuit part together with the first parallel resonance circuit;  
a second switch element that is connected to the second  
10 parallel resonance circuit and forms a second parallel resonance circuit part together with the second parallel resonance circuit; and  
a series resonance circuit having a first end connected to an end of the first parallel resonance circuit part and a  
15 second end connected to an end of the second parallel resonance circuit part,  
the first and second switching elements being alternately turned on and off in accordance with control signals externally supplied.  
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2. The power supply apparatus as claimed in claim 1, wherein one of the first and second parallel resonance circuit parts comprises a composite capacitance formed by a first capacitive element and an output capacitance of one of the first  
25 and second switching elements.
3. The power supply apparatus as claimed in claim 1,

wherein the series resonance circuit comprises a composite capacitance formed by a second capacitive element and a capacitance of a load supplied with power supplied by the power supply apparatus.

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4. The power supply apparatus as claimed in claim 2, wherein the series resonance circuit comprises a composite capacitance formed by a second capacitive element and a capacitance of a load supplied with power supplied by the power  
10 supply apparatus.

5. The power supply apparatus as claimed in claim 1, wherein the control signal applied to the second switching element has a phase opposite to that of the control signal  
15 applied to the first switching element.

6. The power supply apparatus as claimed in claim 1, wherein the first and second switching elements are transistors, and resistors are provided between the transistors and a dc  
20 power supply.

7. The power supply apparatus as claimed in claim 1, wherein:

the first and second switching elements are transistors,  
25 and resistors for use in current limiting are provided between the transistors and a dc power supply; and  
connection nodes between the transistors and the

resistors are grounded via capacitors.

8. The power supply apparatus as claimed in claim 1,  
wherein the series resonance circuit comprises an inductance  
5 element and a capacitance element connected in series, and a  
connection node therebetween is an output terminal of the power  
supply apparatus.

9. The power supply apparatus as claimed in claim 1,  
10 further comprising a voltage doubler rectifier circuit  
connected to a node in the series resonance circuit.

10. A power supply circuit comprising:  
first and second switching elements respectively  
15 controlled by first and second clock signals;  
a first parallel resonance circuit connected between the  
first switching element and a dc power supply;  
a second parallel resonance circuit connected between  
the second switching element and the dc power supply; and  
20 a series resonance circuit connected between the first  
and second parallel resonance circuits,  
an output voltage of the power supply circuit being  
obtained from a node in the series resonance circuit.

25 11. The power supply circuit as claimed in claim 10,  
further comprising a first resistor interposed between the dc  
power supply and the first parallel resonance circuit, and a

second resistor interposed between the dc power supply and the second parallel resonance circuit.

12. The power supply circuit as claimed in claim 11,  
5 further comprising a first capacitor via which a first node at which the first resistor and the first parallel resonance circuit are connected in series is grounded, and a second capacitor via which a second node at which the second resistor and the second parallel resonance circuit are connected in  
10 series is grounded.

13. The power supply circuit as claimed in claim 10, further comprising a voltage doubler rectifier circuit that produces, from the output voltage, a dc voltage that has an  
15 amplitude multiple times as large as an amplitude of the dc power supply.

14. An image forming apparatus comprising:  
an image forming part; and  
20 a power supply apparatus that supplies power to the image forming part,  
the power supply apparatus comprising:  
first and second parallel resonance circuits;  
a first switching element that is connected to the first  
25 parallel resonance circuit and forms a first parallel resonance circuit part together with the first parallel resonance circuit;

a second switch element that is connected to the second parallel resonance circuit and forms a second parallel resonance circuit part together with the second parallel resonance circuit; and

5           a series resonance circuit having a first end connected to an end of the first parallel resonance circuit part and a second end connected to an end of the second parallel resonance circuit part,

          the first and second switching elements being  
10 alternately turned on and off in accordance with control signals externally supplied.